

**REMARKS**

**I. STATUS OF THE CLAIMS**

Claims 1-24 are currently pending. Of these, claims 3, 13, 16, 17 and 20 are "objected to".

**II. REJECTION OF CLAIM UNDER 35 USC 112, SECOND PARAGRAPH**

Claim 3 is amended to overcome the rejection.

**III. REJECTION OF CLAIMS 1-4, 6, 8, 9, 18, 19 AND 21 UNDER 35 USC 102(E) AS BEING ANTICIPATED BY BEHFAR**

The present invention as recited, for example, in claim 1, relates to an optical waveguide that is formed on a substrate. The optical waveguide comprises (a) a curved ridge structure that is formed by etching the substrate so as to have a curvature in a longitudinal direction of the curved ridge structure; (b) a curved optical path that is formed along the curved ridge structure; and (c) a buffer layer that covers a side of the curved ridge structure and that has a lower refractive index than a refractive index of the substrate.

Please note that claim 1 is amended to recite that the curved ridge structure is formed by etching the substrate. Support for the amendment is found, for example, on page 7, lines 24-25; page 9, lines 22-23; and page 10, lines 7-13, of the specification.

Behfar discloses a wafer structure that includes a substrate 304 with an n-type lower cladding layer 308, an active layer 310, a p-type upper cladding layer 312, a highly p-doped contact layer 330 and an n-doped InP layer 306. See, for example, FIGS. 7a to 7f; and column 6, lines 39, through column 7, line 31, of Behfar.

On page 3 of the Office Action, with respect to FIG. 7a of Behfar, the Examiner correlates the lower cladding layer 308 of Behfar to the curved ridge structure of embodiments of the present invention.

However, in Behfar, the n-type lower cladding 308 (which the Examiner correlates to the curved ridge structure of embodiments of the present invention) is formed by depositing on the substrate 304. In comparison, in the present invention as recited, for example, in claim 1, the curved ridge structure is formed by etching the substrate.

It is respectfully submitted that Behfar does not disclose or suggest that a curved ridge structure is formed by etching the substrate as recited, for example, in claim 1.

The above comments are directed to claim 1. However, it is respectfully submitted that the comments would be helpful for understanding differences of various other claims over the

cited reference.

In view of the above, it is respectfully submitted that the rejection is overcome.

**IV. REJECTION OF CLAIMS 7, 10 AND 23 UNDER 35 USC 102(B) AS BEING ANTICIPATED BY TAKIZAWA**

The present invention as recited, for example, in claim 1 (from which claims 7 and 10 depend), relates to an optical waveguide that is formed on a substrate. The optical waveguide comprises (a) a curved ridge structure that is formed by etching the substrate so as to have a curvature in a longitudinal direction of the curved ridge structure; (b) a curved optical path that is formed along the curved ridge structure; and (c) a buffer layer that covers a side of the curved ridge structure and that has a lower refractive index than a refractive index of the substrate.

The Examiner correlates the electrode 13A of Takizawa to the curved ridge structure of various embodiments of the present invention.

However, the electrode 13A of Takizawa is a flat electrode disposed asymmetrically about an optical waveguide on a substrate. See, for example, the Abstract, and FIG. 1, of Takizawa. Electrode 13A of Takizawa is not a curved ridge structure as recited, for example, in claim 1.

The above comments are directed to claim 1. However, it is respectfully submitted that the comments would be helpful for understanding differences of various other claims over the cited reference.

In view of the above, it is respectfully submitted that the rejection is overcome.

**V. REJECTION OF CLAIM 5 UNDER 35 USC 103 AS BEING UNPATENTABLE OVER BEHFAR**

The above comments for distinguishing over Behfar also apply here, where appropriate.

In view of the above, it is respectfully submitted that the rejection is overcome.

**VI. REJECTION OF CLAIMS 11 AND 12 UNDER 35 USC 103 AS BEING UNPATENTABLE OVER TAKIZAWA**

The above comments for distinguishing over Takizawa also apply here, where appropriate.

In view of the above, it is respectfully submitted that the rejection is overcome.

VII. REJECTION OF CLAIMS 14 AND 15 UNDER 35 USC 103 AS BEING UNPATENTABLE OVER BEHFAR IN VIEW OF MATSUMURA

The above comments for distinguishing over Behfar also apply here, where appropriate.

In view of the above, it is respectfully submitted that the rejection is overcome.

VIII. REJECTION OF CLAIM 24 UNDER 35 USC 103 AS BEING UNPATENTABLE OVER TAKIZAWA

The above comments for distinguishing over Takizawa also apply here, where appropriate.

In view of the above, it is respectfully submitted that the rejection is overcome.

IX. CONCLUSION

In view of the above, it is respectfully submitted that the application is in condition for allowance, and a Notice of Allowance is earnestly solicited.

If any further fees are required in connection with the filing of this response, please charge such fees to our Deposit Account No. 19-3935.

Respectfully submitted,

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